



SEQUENCE LISTING

<110> KIM, BUM-JOON
KIM, CHANG-JIN
KO, YOUNG HWAN
KOH, JEONG-SAM
PARK, DONG-JIN
LEE, HYANG BURM
SEOUL, HONG KIM
KIM, SUN-HUYN

<120> IDENTIFICATION METHOD OF GENUS STREPTOMYCES BY USING
groEL2 GENE

<130> 05823.0260-00000

<140> 10/824,527

<141> 2004-04-15

<150> KR 2003-24656

<151> 2003-04-18

<150> KR 2003-80580

<151> 2003-11-14

<160> 61

<170> PatentIn Ver. 3.2

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
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<223> Description of Artificial Sequence: Synthetic
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 <213> *Streptomyces acrimycini*

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 <212> DNA
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<400> 7
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<211> 420

<212> DNA

<213> *Streptomyces ambofaciens*

<400> 11

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<210> 12

<211> 420

<212> DNA

<213> *Streptomyces aminophilus*

<400> 12

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 gagaccaagg agcagatcgc ctccaccgcc tccatctccg ctgccgacac ccagatcggc 240
 gagctgatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
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<210> 13

<211> 420

<212> DNA

<213> *Streptomyces anandii*

<400> 13

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<213> *Streptomyces argenteolus*

<400> 14

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<211> 420

<212> DNA

<213> *Streptomyces bambergiensis*

<400> 15

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<210> 16

<211> 420

<212> DNA

<213> *Streptomyces capillispiralis*

<400> 16

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<213> *Streptomyces carpinensis*

<400> 17

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<210> 18

<211> 422

<212> DNA

<213> *Streptomyces catenulae*

<400> 18

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<210> 19

<211> 420

<212> DNA

<213> *Streptomyces cellulosa*

<400> 19

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<210> 20

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<213> *Streptomyces chartreusis*

<400> 20

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<210> 21

<211> 420

<212> DNA

<213> *Streptomyces chattanoogenesis*

<400> 21

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 <213> *Streptomyces cinnamonensis*

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 <213> *Streptomyces cirratus*

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 <212> DNA
 <213> *Streptomyces coeruleorubidus*

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<210> 26
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 <212> DNA
 <213> *Streptomyces collinus*

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 <211> 420
 <212> DNA
 <213> *Streptomyces corchorusii*

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<210> 28
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 <212> DNA
 <213> *Streptomyces diastaticus*

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<210> 29
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 <213> *Streptomyces djakartensis*

<400> 29
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<210> 30

<211> 423

<212> DNA

<213> *Streptomyces erumpens*

<400> 30

aagaagacgg acgacgtcgc cggtgacggc acgaccaccg cgaccgttct ggcccaggcc 60
ctggtcacag cggagggcct gcgcaacgtc gccgcggcgc ccaacccgat ggccctgaag 120
cgcggtatcg agaaggccgt cgaggccgtc tccgcgcgcc tgctcgagca ggccaaggac 180
gtggagacca aggagcagat cgcttccacc gcctccatct ccgcccgcga caccagatc 240
ggcgagctga tcgccgaggc catggacaag gtcggcaagg aaggcgtcat caccgtcgag 300
gagtcaccaga ccttcggtct ggagctggaa ctacccgagg gtatgcgctt cgacaagggc 360
tacatctcgg cgtactttgc caccgacatg gagcgcgtgg aggccgcgct cgacgacccg 420
tac 423

<210> 31

<211> 420

<212> DNA

<213> *Streptomyces fulvissimus*

<400> 31

aagaagacgg acgacgtcgc cggtgacggc acgacgaccg cgaccgtcct cgcccaggcg 60
ctcgtcaagg aaggcctgcg caacgtcgcg gccggcgcca acccgatggc cctcaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggccgcctgc tcgagcaggc caaggacgtg 180
gagaccaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac ccagatcggc 240
gagctcatcg ccgaggccat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcgcagacct tcggtctgga gctcgagctc accgagggca tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtcgtcga cgacccgtac 420

<210> 32

<211> 420

<212> DNA

<213> *Streptomyces galilaeus*

<400> 32

aagaagacgg acgacgtcgc cggtgacggc acgaccaccg cgaccgttct cgcccaggcg 60
ctggtccgcg agggcctgcg caacgtggcg gccggcgcca acccgatggc tctgaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggtgccctcc tcgagcaggc gaaggatgtc 180
gagaccaagg agcagatcgc ttcgacggcc tccatctccg ccgccgacac ccagatcggc 240
gagctcatcg ccgagggcgt ggacaaggtc ggcaagggaag gcgtcatcac ggtcgaggag 300
tcgcagacct tcggtctcga gctcgagctc accgagggca tgcgcttcga caagggctac 360
atctcggcgt acttcgcgac cgacatggag cgtatggagg ccgtcctcga cgacccgtac 420

<210> 33

<211> 420

<212> DNA

<213> *Streptomyces griseochromogenes*

<400> 33

aagaagacgg acgacgtcgc cggtgacggc acgacgaccg cgaccgtcct ggcccaggcc 60
ctggtcaagg aaggcctccg caacgtcgcg gccggcgcca acccgatggc tctgaagcgc 120

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ggtatcgaga aggccgctcga ggccgtctcc gccgcctcc tcgagcaggc gaaggacgtc 180
gagaccaagg agcagatcgc ctccaccgcg tccatctccg ccgccgacac ccagatcggc 240
gagctgatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
agcaacacct tcggtctgga gctcgagctc accgagggca tgcgcttcga caagggctac 360
atctcgcgct acttcgcgac cgacatggag cgtatggagg cggcgctcga ggaccctac 420

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<210> 34

<211> 420

<212> DNA

<213> *Streptomyces griseolus*

<400> 34

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aagaagacgg acgacgtcgc cggcgacggg acgaccaccg ccaccgttct cgcccaggcg 60
ctcgtccgtg agggcctgcg caacgtcgcc gccggtgcc aaccgatggc tctcaagcgt 120
ggcatcgaga aggccgctcga ggccgtctcc gccgcctgc tggagcaggc caaggacgtg 180
gagaccaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac cgagatcggc 240
gccaagatcg ccgaggcgat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
tcccagacct tcggtctgga gctggaactc accgagggta tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggaga cgtcgcttcga cgaccctac 420

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<210> 35

<211> 420

<212> DNA

<213> *Streptomyces griseoviridis*

<400> 35

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aagaagacgg acgacgtcgc cggtgacggg acgaccaccg cgaccgtcct cgcccaggcc 60
ctggtcaagg agggcctgcg caacgtagcc gccggcgcca aaccgatggc cctgaagcgc 120
ggtatcgaga aggccgctcga ggccgtctcc gccgccctgc tggagcaggc gaaggacgtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac ccagatcggc 240
gagctgatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
tcccagacct ttggtctgga gctggagctc accgagggta tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtgctcga cgaccctac 420

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<210> 36

<211> 420

<212> DNA

<213> *Streptomyces humiferus*

<400> 36

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aagaagacgg acgacgtcgc cggtgacggg acgaccaccg cgaccgttct cgcccaggcc 60
ctggtcaagg aaggcctgcg caacgtcgcg gccggcgcca aaccgatggc cctgaagcgc 120
ggtatcgaga aggccgctcga ggccgtctcc gccgccctgc tcgagcaggc caaggacgtc 180
gagaccaagg agcagatcgc ctccacggcc tcgatctccg ccgccgacac ccagatcggc 240
gagctcatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
tcccagacct tcggtctgga gctggagctc accgagggta tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg cgtcgctcga cgaccctac 420

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<210> 37

<211> 420

<212> DNA

<213> *Streptomyces hygroscopicus*

<400> 37

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aagaagacgg acgacgtcgc cggtagacggc acgacgaccg cgaccgtcct ggcccaggcc 60
ctgggtccgcg agggcctgcg caacgtcgcc gccggcgcca acccgatggc cctcaagcgc 120
ggtatcgagc gtgccgtcga ggccgtctcc gccgccctgc tggagcaggc caaggacgtg 180
gagaccaagg agcagatcgc ttcgaccgcc tccatctccg ccgctgacac ccagatcggc 240
gagctcatcg ccgaggccat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcccagacct tcggtctgga gctggaactc accgagggtg tgcgcttcga caagggttac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg cgtcgctcga cgaccgtac 420

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<210> 38

<211> 420

<212> DNA

<213> *Streptomyces minutiscleroticus*

<400> 38

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ctgggtccgcg agggcctgcg caacgtcgcc gccggcgcca acccgatggc cctgaagcgc 120
ggtatcgaga agggcgtcga ggccgtctcc ggtgccctgc tggagcaggc gaaggacgtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacgt ccagatcggc 240
gagctcatcg ccgaggccat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcccagacct tcggtctgga gctggagctc accgagggtg tgcgcttcga caagggttac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtcctcga cgaccgtac 420

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<210> 39

<211> 423

<212> DNA

<213> *Streptomyces murinus*

<400> 39

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aagaagacgg acgacgtcgc cggtagcggc acgaccaccg cgaccgtcct cgcccaggcc 60
ctgggtcacag cggaaggcct gcgcaacgtc gccgccgggtg ccaaccgat ggccctgaag 120
cgcggtatcg agaaggccgt cgaggccgtc tccgccgcc tgcctgagca ggccaaggac 180
gtcgagacca aggagcagat cgccctccacc gcgtccatct ccgccgccga caccagatc 240
ggcgagctga tcgccgaggc gatggacaag gtcggcaagg aaggcgcat caccgtcgag 300
gagagcaaca ccttcggtct ggagcttgag ctaccgagg gcattgcgctt cgacaagggc 360
tacatcttcg cctacttcgc caccgacatg gagcgcattg aggcgtcgct cgacgaccgc 420
tac 423

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<210> 40

<211> 420

<212> DNA

<213> *Streptomyces nodosus*

<400> 40

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aagaagacgg acgacgtcgc cggtagcggc acgaccaccg cgaccgtgct cgcccaggcg 60
ctgggtccgcg agggcctgcg caacgtcgcc gccgggtgcc acccgatggc cctgaagcgc 120
ggtatcgaga agggcgtcga ggccgtctcc accgccctgc tggagcaggc gaaggacgtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac ccagatcggc 240
gagctgatcg ccgaggccat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcgcagacct tcggtctcga gctcgagctc accgagggtg tgcgcttcga caagggttac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtcctcga cgaccgtac 420

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<210> 41
 <211> 420
 <212> DNA
 <213> *Rhodococcus equi*

<400> 41
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 ctcggtccgcg agggcctgcg caacgtcgct gccggcgcca acccgctggg tctgaagcgc 120
 ggcacgcgaga aggccgtcga ggccgtcacc gccaaagtgc tcgacaccgc caaggagggtc 180
 gagaccaagg agcagatcgc tgccaccgcc gggatctcgg cgggcgactc cacgatcggc 240
 gagctcatcg ccgaggcgat ggacaagggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 tcgaactcct tcggcctgca gctcgagctc accgagggtg tgcgcttcga caagggctac 360
 atctcgctgt acttcgcgac cgacgccgag cgtcagggaag cggtcctcga ggatccgtac 420

<210> 42
 <211> 420
 <212> DNA
 <213> *Tsukamurella paurometabola*

<400> 42
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 ctcggtgcgcg aggggtctgcg caacatggct gcgggtgcga acccgctggg cctcaagcgc 120
 ggcacgcgaga aggccgtcga ggccgtgacc gagcacctgc tcaaggaggc caaggagggtc 180
 gagaccaagg agcagatcgc tgctaccgcg ggcacatctcg cggcgacacc cgccatcggg 240
 gagctcatcg ccgaggccat ggacaagggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 agcaaacct tcggtctcca gctggagctc accgagggtc tgcgcttcga caagggcttc 360
 atctccggct acttcgccac cgacgccgag cgtcaggagg ccgtgctcga ggacgcctac 420

<210> 43
 <211> 420
 <212> DNA
 <213> *Streptomyces scabiei*

<400> 43
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 ggcacgcgaga aggccgtcga ggccgtctcc ggcgcctgc tggagcaggc gaaggatgtc 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac ccagatcggc 240
 gagctcatcg ccgaggcgat ggacaagggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggagctc accgagggtg tgcgcttcga caagggctac 360
 atctcggcgt acttcgccac cgacatggag cggatggagg cgtcgctcga cgaccctac 420

<210> 44
 <211> 420
 <212> DNA
 <213> *Streptomyces scabiei*

<400> 44
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 ctgggtccgcg agggcctgcg caacgtcgcc gccggcgcca acccgatggc cctgaagcgc 120
 ggtatcgaga aggccgtcga ggccgtctcc ggtgcgtgc tcgaccaggc caaggagggtc 180
 gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac ccagatcggc 240
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 tcgcagacct tcgggcttga gcttgagctc accgagggtc tgcgcttcga caagggctac 360
 atctcggcgt acttcgcgac cgacatggag cgcagggagg ccgtgctcga ggaccctac 420

<210> 45
 <211> 420
 <212> DNA
 <213> Streptomyces scabiei

<400> 45
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 ctcgtagcgc agggcctgcg caacgtcgcc gccggtgcc accgatggc tctcaagcgc 120
 ggcatcgaga aggccgtcga ggccgtctcc ggccgctgc tggagcaggc gaaggatgtc 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac ccagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggagctc accgagggtta tgcgcttcga caagggttac 360
 atctcggcgt acttcgccac cgacatggag cggatggagg cgtcgctcga cgaccgttac 420

<210> 46
 <211> 420
 <212> DNA
 <213> Streptomyces scabiei

<400> 46
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 ctcgtagcgc agggcctgcg caacgtcgcc gccggtgcc accgatggc tctcaagcgc 120
 ggcatcgaga aggccgtcga ggccgtctcc gccgctgc tggagcaggc caaggacgtg 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac cgagatcggc 240
 gccaagatcg ccgaggcgat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggaactc accgagggtta tgcgcttcga caagggttac 360
 atctcggcgt acttcgccac cgacatggag cgtatggaga cgtcgcttcga cgaccgttac 420

<210> 47
 <211> 420
 <212> DNA
 <213> Streptomyces scabiei

<400> 47
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 ctggtgcgcg agggctctgc caacgtggcc gccggtgcc accgatggc tctcaagcgc 120
 ggcatcgaga aggccgtcga ggccgtctcc ggccgctgc tggagcaggc gaaggatgtc 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac ccagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggagctc accgagggtta tgcgcttcga caagggttac 360
 atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtcctcga cgaccgttac 420

<210> 48
 <211> 420
 <212> DNA
 <213> Streptomyces scabiei

<400> 48
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 ctggtgcgcg agggctctgc caacgtggcc gccggtgcc accgatggc tctcaagcgc 120
 ggcatcgaga aggccgtcga ggccgtctcc ggccgctgc tggagcaggc gaaggatgtc 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac ccagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaagggaag gcgtcatcac cgtcgaggag 300

tcccagacct tccgtctgga gctggagctc accgagggtg tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtccctcga cgacccgtac 420

<210> 49

<211> 420

<212> DNA

<213> *Streptomyces scabiei*

<400> 49

aagaagacgg acgacgtcgc cggcgacggg acgaccaccg ccaccgttct cgcccaggcg 60
ctcgtccgcg agggcctgcg caacgtcgcc gcgggtgccg acccgatggc tctgaagcgt 120
ggcatcgaga aggccgtcga ggccgtctcc gccgctctgc tggagcaggc gaaggacgtg 180
gagaccaagg agcagatcgc ttcgacggcc tccatctccg ctgccgacac cgagatcggc 240
gccaaagatcg ccgaggcgat ggacaagggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcccagacct tccgtctgga gctggagctc accgagggtg tgcgcttcga caagggctac 360
atctcggcgt acttcgccac cgacatggag cgtatggaga cgtcgttcga cgacccgtac 420

<210> 50

<211> 420

<212> DNA

<213> *Streptomyces acidiscabies*

<400> 50

aagaagacgg acgacgtagc cgggtgacggc acgacgaccg cgacggtcct ggcccaggca 60
ctgggtccgcg agggcctccg caacgtcgcc gcaggcgcca acccgatggc cctgaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggcgcgctcc tggagcaggc gaaggacgtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac gcagatcggc 240
gagctcatcg ccgaggcgat ggacaagggtc ggcaagggaag gcgtcatcac ggtcgaggag 300
tcgcagacct tcggcctgga gcttgagctc accgagggca tgcgcttcga caagggctac 360
atctcggcgt acttcgcgac cgacatggag cgcgtggagt cgtccctgga cgacccgtac 420

<210> 51

<211> 420

<212> DNA

<213> *Streptomyces turgidiscabies*

<400> 51

aagaagacgg acgacgtagc cgggtgacggc acgacgaccg cgaccgtcct ggcccaggcg 60
ctgggtccgcg agggcctgcg caacgtggcc gcgggtgcga acccgatggc cctgaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc gaaggagggtc 180
gagacgaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac gcagatcggc 240
gagctcatcg ccgaggcgat ggacaagggtc ggcaagggaag gcgtcatcac cgtcgaggag 300
tcccagacct tccgtctgga gctggaactc accgagggtg tgcgcttcga caagggctac 360
atctcggcgt acttcgcgac cgacatggag cgcgtggagg cgtcgctcga ggaccctac 420

<210> 52

<211> 420

<212> DNA

<213> *Streptomyces turgidiscabies*

<400> 52

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ctgggtccgcg agggcctgcg caacgtggcc gcgggtgcga acccgatggc cctgaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc gaaggagggtc 180

gagacgaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac gcagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggaactc accgagggta tgcgcttcga caagggctac 360
 atctcggcgt acttcgcgac cgacatggag cgcattggagg cgtcgctcga ggaccctac 420

<210> 53

<211> 420

<212> DNA

<213> *Streptomyces turgidiscabies*

<400> 53

aagaagacgg acgacgtagc cggtagcggc acgacgaccg cgaccgtcct ggcccaggcg 60
 ctggtccgcg agggcctgcg caacgtggcc gcgggtgcga acccgatggc cctgaagcgc 120
 ggcacgcaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc gaaggaggtc 180
 gagacgaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac gcagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggaactc accgagggta tgcgcttcga caagggctac 360
 atctcggcgt acttcgcgac cgacatggag cgcattggagg cgtcgctcga ggaccctac 420

<210> 54

<211> 420

<212> DNA

<213> *Streptomyces turgidiscabies*

<400> 54

aagaagacgg acgacgtagc cggtagcggc acgacgaccg cgaccgtcct ggcccaggcg 60
 ctggtccgcg agggcctgcg caacgtggcc gcgggtgcga acccgatggc cctgaagcgc 120
 ggcacgcaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc gaaggaggtc 180
 gagacgaagg agcagatcgc ttcgaccgcc tccatctccg ccgccgacac gcagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggaactc accgagggta tgcgcttcga caagggctac 360
 atctcggcgt acttcgcgac cgacatggag cgcattggagg cgtcgctcga ggaccctac 420

<210> 55

<211> 420

<212> DNA

<213> *Streptomyces bottropensis*

<400> 55

aagaagacgg acgacgtagc cggtagcggc acgacgaccg cgaccgtcct ggcccaggcc 60
 ctggtgcgcg aggggtctgcg caacgtggcc gccggcgcca acccgatggc cctcaagcgc 120
 ggcacgcaga aggccgtcga ggccgtctcc ggcgccctgc tggagcaggc gaaggatgtc 180
 gagaccaagg agcagatcgc ttccacggcc tccatctccg ccgccgacac ccagatcggc 240
 gagctcatcg ccgaggcgat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
 tcccagacct tcggtctgga gctggagctc accgagggta tgcgcttcga caagggctac 360
 atctcggcgt acttcgccac cgacatggag cgtatggagg ccgtcctcga cgaccctac 420

<210> 56

<211> 420

<212> DNA

<213> *Streptomyces diastatochromogenes*

<400> 56

aagaagacgg acgacgtcgc cggtagcggc acgaccaccg cgaccgttct cgcccaggcc 60

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ctgggtcaagg aaggcctgcg caacgtagcc gccggcgcca acccgatggc cctcaagcgc 120
ggcatcgaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc caaggagggtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac ccagatcggc 240
gagctgatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
tcgcagacct tcggtctgga gcttgagctc accgagggca tgcgcttcga caagggttac 360
atctcggcgt acttcgcgac cgacatggag cgcattggagg cgttcctgga ggacccctac 420

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<210> 57

<211> 420

<212> DNA

<213> *Streptomyces neyagawaensis*

<400> 57

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aagaagacgg acgacgtcgc cggtgacggt acgaccaccg cgaccgtcct cgcccaggcg 60
ctcgtacgcg agggcctgcg caacgtcgcc gccggtgcc acccgatggc cctgaagcgc 120
ggtatcgaga aggccgtcga ggccgtctcc ggtgcgctgc tcgaccaggc caaggagggtc 180
gagaccaagg agcagatcgc ctccacggcc tccatctccg ccgccgacac ccagatcggc 240
gagctgatcg ccgaggccat ggacaaggtc ggcaaggaag gcgtcatcac cgtcgaggag 300
tcgcagacct tcggtctgga gctcgagctc accgagggca tgcgcttcga caagggttac 360
atctcggcgt acttcgccac cgacatggag cgcattggagg cgttcctgga ggacccctac 420

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<210> 58

<211> 420

<212> DNA

<213> *Streptomyces scabiei*

<400> 58

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<210> 59

<211> 420

<212> DNA

<213> *Streptomyces scabiei*

<400> 59

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<210> 60

<211> 420

<212> DNA

<213> *Streptomyces acidiscabies*

<400> 60

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<210> 61

<211> 420

<212> DNA

<213> *Streptomyces acidiscabies*

<400> 61

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